

Applicants Response to Examiner's Comments

Election/Restrictions

Examiner holds that the Application contains claims directed to the following patentably

5 distinct species:

A: A photovoltaic device having a metallic bottom layer with indentations. (Claim 1).

B: A system having a bottom layer with concentrator sections and control sections. (Claim 2).

10 C: A photovoltaic cell with means for electron-hole pair confinement. (Claim 3)

Examiner judges that the species are independent or distinct because claims to the different species recite the mutually exclusive characteristics of such species. In addition, Examiner holds that these species are not obvious variants of each other based on the current record.

15 Examiner asks under 35 U.S.C. 121 that Applicant elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Examiner holds that no current Claim 1 through 3 is generic. Examiner states that there is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. It is understood that different species require a different
20 field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph. Examiner advises Applicant that the reply to this requirement to be complete must include (i) an election of a species to be examined

even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected species, including any claims subsequently added. Applicant understands that an argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election, and that an election of a species may be made
5 with or without traverse. Applicant understands that to preserve a right to petition, the election must be made with traverse. Examiner advises that if the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse, that traversal must be presented at the time of election in order to be considered timely, and that a failure to timely traverse the requirement will result in
10 the loss of right to petition under 37 CFR 1.144. Examiner further states that if claims are added after the election, applicant must indicate which of these claims are readable on the elected species.

Examiner notes that should Applicant traverse on the ground that the species are not patentably distinct, Applicant should submit evidence or identify such evidence now of record
15 showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the Examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species. Applicant understands that upon the allowance of a generic claim, Applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the
20 limitations of an allowable generic claim as provided by 37 CFR 1.141.

Examiner cites a telephone conversation with Patrick Reilly on 10 October 2007 in which a provisional election was made without traverse to prosecute the invention of Group I, claim 1.

Applicant understands that affirmation of this election must be made by Applicant in replying to the Office Action of .October 12th, 2007.

Examiner withdraws claims 2 and 3 from further consideration, as per 37 CFR 1.142(b), as being drawn to a non-elected invention.

5 Applicant acknowledges the provisional election of Claim 1 as referred to herein, and withdraws Claims 2 and 3 without prejudice and retaining the right to pursue these Claims 2 and 3 in a Continuation Patent Application.

Claim Objections

10 Examiner objects to Claim 1 because of the following informalities: In line 1 of the Claim 1 the term "photo voltaic" is recited, although it appears "photovoltaic" was intended. Appropriate correction is required.

 Applicant responds that Claim 1 has been amended to delete the incorrect spelling of "photo voltaic" to the correct spelling of "photovoltaic". All subsequent pending claims also include the correct spelling of "photovoltaic". Applicant therefore respectfully submits that the
15 Examiner's objection to Claim 1 is fully satisfied by Claim 1 as currently amended.

Claim Rejections – 35 USC § 112

Examiner quotes the following of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

20 Examiner rejects claim 1 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Examiner states that in line 4 of claim 1, there is no explicit antecedent basis for "the top structure". The claim is treated as though "the top layer" was recited.

Applicant replies that Claim 1 has been corrected to uniformly recite "top structure" rather than include any reference to a "top layer".

5 Examiner states that in lines 4-5 of claim 1, there is no explicit antecedent basis for "the bottom structure". The claim is treated as though "the bottom layer" was recited.

Applicant replies that Claim 1 has been corrected to uniformly recite "bottom structure" rather than include any reference to a "bottom layer".

Applicant respectfully submits that Examiner's rejection under second paragraph of 35
10 U.S.C. 112 is traversed by Claim 1 as currently amended.

Claim Rejections – 35 USC § 102

Examiner quotes the following of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

15 A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20 Examiner rejects claim 1 under 35 U.S.C. 102(b) as being anticipated by Fraas et al. (US 5,118,361).

Examiner states that Fraas et al. disclose a photovoltaic device for concentrating sunlight onto multiple photovoltaic cells (Figures 1 and 3) comprising: a metallic bottom layer (46) with a multiplicity of indentations (47) that each contain a photovoltaic cell (42) (Column 6, lines 22-
25 35); a transparent top layer (Unitary structure of Fresnel lenses disclosed; Column 2, lines 52-60) containing multiple optical devices (i.e. each Fresnel lens in Figure 1 is a separate device), the

top layer being aligned to the bottom layer such that the optical devices are positioned as claimed. (Column 2, lines 46-61)

Applicant responds that Claim 1 as currently amended teaches that the top structure is rigid and further recites that:

5 “the rigid top structure provides enough mechanical strength, rigidity, and stability to permit the photovoltaic device to be positioned.”

(See Paragraphs 0064 and 0102 of the Application.)

10 The present invention as recited in Claim 1 thereby teaches of a device wherein a top structure is movable to enable optimized capture of sunlight and other light energy as light source orientation varies. (See Figures 1 and 6; and Paragraphs 0028, 0056 and 0084 of the Application.) The present invention thereby enables a use of a simplified and less costly lens and photovoltaic combination. (See Figures 1 and 2; and Paragraphs 0058 through 0063 of the Application.)

15 In contrast, Fraas et al. teach of a flexible circuit tape comprising “a flexible tape having a base of electrically non-conductive material supporting parallel strips of electrically conductive material”. (See Claims 3, 4, 7, 8, 20 and 23; and Figure 7 of Fraas et al.)

Furthermore Fraas et al. teach of optimizing the design of the lens and solar cell array designs to achieve optimal energy output of each photovoltaic cell. (See Col. 2, Lines 46-62; and Figures 1 and 3 of Fraas et al..)

20 The present invention teaches away from Fraas et al. and teaches toward a rigid structure comprising a plurality lens and photovoltaic cell combinations that may be positioned in masse to improve the instantaneous capture of light energy, wherein the elements of the lens may be less costly though suboptimal for focussing light energy onto a photovoltaic cell.

25 Applicant respectfully submits that Claim 1 is not anticipated by Fraas et al. and that Claim 1 is allowable.

Examiner further rejects claim 1 under 35 U.S.C. 102(b) as being anticipated by Stark.
(US 4,323,052)

Examiner states that Stark discloses a photovoltaic device for concentrating sunlight onto multiple photovoltaic cells (Figure 3) comprising: a metallic bottom layer (28) with a
5 multiplicity of indentations (30) a plurality of which contain photovoltaic cells (59) (Column 13, lines 45-47; Column 14, lines 54-64); a transparent top layer (e.g. 32, 12a, 12b) containing multiple optical devices (12a, 12b), the top layer being aligned to the bottom layer such that the optical devices are positioned as claimed. (Column 14, lines 54-62)

Applicant replies that Stark teaches of a lens and photovoltaic pairing that supplies
10 energy both for distillation and for generating electricity. Stark requires that a fluid, e.g., salt water, that absorbs heat be placed in between an optical lens and a photovoltaic cell, and that the distance between the lens and the cell be large enough to accommodate an absorption of the infrared light energy by the fluid that is transmitted through the lens. This requirement of Stark, which is necessary to distil the fluid as well as to filter the infrared light energy from the
15 photovoltaic cells, is taught by Stark. Quoting from Stark:

“Typically, for example, if the focal distance of the lens is 105mm [42 inches],
i.e., where there is a distance of 42 inches from the lens to the maximum area of
concentration, the plates will preferably be located at, for example, 90cm [35.5 inches]
from the lens.”

20 Stark clearly teaches away from locating the lens proximate to the photovoltaic cell receiving light energy from the lens. In direct contrast, the present invention is directed to an arrangement of a plurality of lenses that are placed proximate to a plurality of photovoltaic cells. (See Paragraphs 0055, 0058, 0059, 0063, 0070, 0081, and 0098 of the Application.)

Applicant respectfully submits that Claim 1 is not anticipated by Stark and that Claim 1 is allowable.

Applicant respectfully submits that Examiner's rejections under 35 U.S.C. 102(b) is traversed by Claim 1 as currently amended.

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New Claims

Applicant submits new Claims 4 through twelve herein. Applicant notes that Claim 4 is an independent Claim and that Claims 5 through twelve depend directly from Claim 4.

Applicant further notes that Claim 4 recites (1.) a top and bottom structure that are at no greater than 20 millimeters and thickness, and (2.) a "means to move the bottom structure and top structure in relation to a light energy source, wherein the relative mechanical orientation between the top structure and the bottom structure is substantially invariant."

Applicant respectfully refers to the arguments presented above regarding Claim 1 and the novel limitations of (1.) thickness and (2.) positioning of the lenses and photovoltaic cells as unified pluralities.

15 Applicant respectfully submits that Claims 4 through twelve are not anticipated by either Fraas et al. nor by Stark, and that Claims 4 through twelve are therefore allowable.

Allowability of the Claims

Applicant respectfully submits that the Claims 1, and 4 through 12 as currently amended are allowable.

20 If any matters can be resolved by telephone, Applicant requests that the Patent and Trademark Office call the Applicant at the telephone number listed below.

Respectfully submitted,

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By: 

Patrick Reilly
Reg. No. 37,427

5 Patrick Reilly
Patent Attorney
Box 7218
Santa Cruz, CA 95061-7218
(831) 332 7127